

CLAIMS

1. A method for manufacturing a three-dimensional photonic structure comprising a plurality of inorganic members composed of an inorganic material and a resin matrix within which the plurality of inorganic members are disposed, the resin matrix being composed of a photo-cured resin material, the method comprising:

a preparing step of preparing the plurality of inorganic members and a photocurable resin material;

a stereolithographic step of successively and repeatedly curing stacked layers composed of the photocurable resin material along the stacking direction to form a three-dimensional component such that cavities filled with the photocurable resin material are formed at positions to be occupied by the inorganic members in the three-dimensional component having a structure in which the plurality of cured resin layers composed of the photo-cured resin material are stacked;

an inserting substep of inserting the inorganic members into concave portions when the concave portions are formed before closing the cavities during the stereolithographic step, each of the concave portions being at least part of the corresponding cavity and having an opening through which each of the inorganic members can pass,

each gap between the surface of each of the concave portions and the corresponding inorganic member being filled with the photocurable resin material; and

a curing step of thermally curing the photocurable resin material remaining in the cavities.

2. The method for manufacturing a three-dimensional photonic structure according to Claim 1, further comprising the steps of: generating the three-dimensional data of the shape of the three-dimensional component in advance; generating slice data from the three-dimensional data, the slice data being generated by slicing the three-dimensional component in a direction perpendicular to the stacking direction of the three-dimensional component; and generating raster data for scanning laser light from the slice data, wherein, in the stereolithographic step, the photocurable resin material is repeatedly cured in the form of layers by scanning the laser light according to the raster data.

3. The method for manufacturing a three-dimensional photonic structure according to Claim 1, wherein the inorganic members each having a dielectric constant higher than that of the photo-cured resin material are used.

4. The method for manufacturing a three-dimensional

photonic structure according to Claim 3, wherein the inorganic members are each a ceramic sinter.

5. The method for manufacturing a three-dimensional photonic structure according to Claim 1, wherein the photocurable resin material used is capable of forming a plurality of pores within the photocurable resin.

6. A three-dimensional photonic structure manufactured by the method according to any one of Claims 1 to 5.